Contribution ID: **25** Type: **not specified**

Implicit kinetic relaxation schemes. Application of plasma physics models

Friday, August 31, 2018 10:15 AM (35 minutes)

In this work we consider PDE models used in plasmas physic like MHD or Vlasov equations.
The key point to solve the kinetic Vlasov equation is the Semi Lagrangian Solver, which is a high-order, CFL less and Matrix-free solver for the transport equation.
The other models present in plasma physic like MHD, anisotropic equation or Poisson solver can be written like approximated BGK models.
For each type of model we will present the different BGK models used to approximate the different physical equations. After that we will propose a high-order asymptotic-preserving scheme in time based on spitting approach. Using this, we obtain a full semi-Lagrangian solver (or other implicit solver for the advection equation) for all the type of models in plasmas physics.
We will illustrate this by some numerical results.

Presenter: Dr FRANCK, Emmanuel (INRIA)